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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,420	07/29/2003	Thomas Lee	02105.002290.	6264
61146	7590	11/30/2006	EXAMINER	
PEPSICO, INC. c/o GOODWIN PROCTER LLP 599 LEXINGTON AVE NEW YORK, NY 10022			CHAWLA, JYOTI	
			ART UNIT	PAPER NUMBER
			1761	

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Application No.

10/628,420

Applicant(s)

LEE ET AL.

Examiner

Jyoti Chawla

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-38 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner. .
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed September 18, 2006 have been entered. Claim 1-22 have been cancelled. Claims 23-38 have been added. Claims 23-38 are pending and examined in the current application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 23-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 23-38 recite ratios of acids, however it is unclear whether the ratios recited are based on respective weights or volumes of the acids under consideration. Clarification is required.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The previous rejections regarding the 102 (b) rejections have been withdrawn in light of applicant's amendments dated September 18, 2006.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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The previous rejections regarding the 103 (a) rejections have been withdrawn in light of applicant's amendments dated September 18, 2006.

(A) Claims 23-30, 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (US 4830862) in view of combination of Van Ness (US 3245798) and Nakel et al (US 4551342).

Regarding claim 23-28 and 35-36, Braun et al, hereinafter Braun, teaches a beverage composition with acid component comprising citric, phosphoric and adipic acids and the salts including citrate and phosphate salts (Column 5, lines 53-68). Braun teaches beverages or soft drinks with lemon-lime and cola flavors (Column 8, line 58 and Column 9, lines 7-10) as recited in claim 23, 24, 37 and 38. Braun teaches that the mixtures of acids total acid component of the beverage concentrate ranges from 1.2 to 20% by weight and for other baverages the total acids can be in the 0.6 to 2% (Column 6, 1-26). The reference further teaches lemon-lime beverage citric acid 3.75 /1500 grams and 1.3/1000 grams, i.e., 0.13-0.25% acid by weight as recited in claim 27 and 28. Braun is silent as to the specific amount of adipic acid in a lemon-lime beverage.

Van Ness teaches that adipic and or fumaric acid that have been made soluble by the addition of surfactants can be used in place of citric acid or in addition to the citric acid (Column 1, lines 15-70) to make the beverages.

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Nakel et al, hereinafter Nakel, teaches beverages and beverage concentrates with improved flavor, desirable sweetness and sourness that could be controlled over a wide range of pH (column 2, lines 1-49) and the concentrates taught are storage stable and without the off flavors due to the insoluble salt formation on storage. The beverages taught by Nakel can be made as carbonated and noncarbonated, with various flavors and blended flavor components including cola, lemon and lime etc., and blends thereof (column 5, line 47 to column 6, line 15) and containing acidulants like citric acid and phosphoric acid. Nakel also teaches addition of calcium, potassium and magnesium and other cations like sodium and ammonium in smaller amounts as acid salts i.e., as citrates, malates and phosphates to the beverage and beverage concentrates taught (column 6; lines 50-62 and column 4, line 63 to column 5, line 10) and (column 2, lines 14-20; column 7, lines 1-14; Column 10-13, Embodiments 1-9 and summary table). Nakel, further teaches that the amount of citric acid in the beverage could vary between 0.06- 0.96% and the reference also teaches of a mixture of cations like Calcium, Phosphorus, Magnesium, sodium and ammonium as citrates, malates, phosphates and dihydrogen phosphates among other forms to provide the right pH and appropriate flavor note in conjunction with the acid (Column 6, lines 50-62) as recited in claims 27-30. Also see (column 1, lines 13-14 and Column 5, line 47 to column 6, line 15). Nakel teaches beverages and beverage concentrates with the organic acid and citric acid, and gives formula to determine the total acidity of the drink and that by varying the amounts of one or more of the acids, it can be determined whether the acid number of

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the beverage, which in turn would determine the acceptability of the beverage (column 8, line 48 to column 9, line 17). The formula taught is:

$$(8.7 \cdot \text{cit}) + (8.9 \cdot \text{mal}) + (11.4 \cdot \text{phos}) + (5.5 \cdot \text{cit} \cdot \text{mal}) - (0.6 \cdot \text{cit} \cdot \text{phos}) + (5.0 \cdot \text{mal} \cdot \text{phos}) + (30.1 \cdot \text{cit} \cdot \text{mal} \cdot \text{phos}) = A$$

wherein cit is the weight ratio of citric acid in the acid component, mal is the weight ratio of malic, succinic or a mixture of malic and succinic acid, phos is the weight ratio of phosphoric acid, and A is from about 9.6 to about 12.1.

The formula assumes malic acid as the organic acid, however any other compatible organic acid could also be used. According to the formula if the resulting acid number (A) falls within 9.6 and 12.1, the beverage would have a desirable acid level. It would be art recognized to input the desired citric acid and other organic acid percent to determine the total acidity of the beverage. If the ratio of organic acid: citric acid is taken as 1:3 or 1:4 as recited by the applicant in claims 23 and 25 respectively and plug in the numbers in the formula where amount of phosphoric acid is zero and organic acid : citric acid is 0.25:0.75 (i.e., 1:3 ratio) and 0.2:0.8 (i.e., 1:4 ratio) respectively. After plugging in the numbers

<u>Ratio</u>	<u>Substitution in Formula</u>	<u>Solution</u>
1: 3→	$(8.7 \times 0.75) + (8.9 \times 0.25) + (5.5 \times 0.75 \times 0.25)$	= 9.78
1: 4→	$(8.7 \times 0.80) + (8.9 \times 0.2) + (5.5 \times 0.80 \times 0.2)$	= 9.62

Both the above ratios have been recited by the applicant as acceptable acid ratios and their results fall within the accepted acidity range (A) of 9.6 to 12.1 as taught by Nakel.

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From the discussion above, it is evident that it had been known in the art to add adipic acid to a beverage either in addition or in place of citric acid (Van Ness). Adipic acid has a smaller dissociation constant as compared to citric acid (Evidenced by Environmental Contaminant Reference Data book). Organic acids in various combinations can be used to make a stable beverage if the total acidity is in the range taught by the formula of Nakel. Therefore it would have been obvious to one of ordinary skill in the art to modify the lemon-lime or cola beverage taught by Braun to contain adipic acid in any ratio desirable, while keeping the total acid of the beverage in the desired range as taught by Nakel. One would have been motivated to do so in order to make the beverage concentrate as a free-flowing, easily transportable dry mix with longer shelf-life, as adipic acid is less hygroscopic than other food acids including citric and phosphoric acids and it does not absorb moisture from the atmosphere.

Thus, the invention as claimed would have been obvious over Braun in view of combination of Van Ness and Nakel, absent any clear and convincing evidence and/or arguments to the contrary.

Regarding claims 24 and 26 recite the ratio range of organic to phosphoric to citric acid in a beverage is 3.0 - 4.0: 1.4 - 2.0: 1.0 in claim 24 and 3.3 - 3.7: 1.6 - 1.8: 1.0 in claim 26 respectively. Braun is silent as to the ratio of the organic acids, Nakel teaches beverages and beverage concentrates with the recited organic acid, phosphoric acid and citric acid and as discussed above Nakel also teaches a formula to determine the total acidity of the drink (column 8, line 48 to column 9, line 17). Nakel teaches a ratio of 3.6: 1.4:1.3 in embodiment 2 (column 1, lines 15-30) which falls within the recited range

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of the applicant for the amount of organic acid and phosphate, however has a little more citric acid in proportion. Nakel also teaches that by adjusting the concentration of acids in relation to the cations or buffer salts, it is possible to alter the pH and sourness in the flavor of the resulting beverage (column 9, lines 10-17). Therefore, it would have been obvious to the one with ordinary skill in the art at the time of the invention to modify Braun based on the teachings from Nakel and include the amount of citric acid in the beverage of Embodiment 2 or vary slightly as long as the total acidity remains in the acceptability range as taught by Nakel because Embodiment 2 taught by Nakel is an example of the various acid combinations possible in preparing a beverage with low pH and Nakel also teaches that the amount of acid components can be adjusted to be used in combination with various cation salts or buffer salts in order to alter the flavor to desired level, i.e., sourness, tartness, delayed or lingering sourness etc.

While the prior art does not expressly teach the exact ratios, it was well known to use the acids listed in shelf stable beverages in different amounts in order obtain the desired flavor (Braun, Van Ness and Nakel). Therefore, absent is showing to the contrary by clear and convincing evidence, it is not seen how the specific ratios claimed by the applicant would create an unexpected result.

Regarding claim 29 and 30, Braun teaches calcium salts of acids like citrate and phosphate to the beverages in the form of mono-, di-, tri ionic forms, i.e., calcium phosphate, calcium hydrogen phosphate and calcium dihydrogen phosphate, (Column 5, lines 5-15) as recited by the applicant.

Regarding claims 33-36 that recite the combined amount of citrate and phosphate salts present in the beverage where two or more acidulants are being used, Braun is silent. Nakel et al, hereinafter Nakel teaches the citrate and phosphate salts as the cation component. Nakel teaches that the cation component for a liquid carbonated beverage ranges between 0.1-0.6% by weight which falls in the range recited by the applicant in claims 15 –18. Nakel also provides general formulas that can be used to determine the right amount of total cations in the beverage in proportion to the acidulants (edible acids) and vice versa to give a general idea of an acceptable range for acid and cation for any beverage flavor taught.

(B) Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (US 4830862) in view of combination of Van Ness (US 3245798) and Nakel et al (US 4551342) as applied above further in view of Lee et al (US 5348756).

Claims 31 and 32 recite the ratio of citrate and phosphate salt. Braun teaches that the level of total acids in the beverage depends on the beverage composition, level of calcium based salts, mouthfeel, taste and stability desired and for beverages that do not contain fruit juice can have the acid range of 0.2-5% by weight, which is different from fruit juice based beverages (Column 6, lines 1-26).

Nakel, teaches the use of mixtures of calcium salts in the beverages which, act as buffers, can be present in the beverage composition either as carbonates, hydroxides, bicarbonates or sour salts (citrates etc.). However, both Braun and Nakel are silent as to the exact proportion of these salts in the beverage composition taught.

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Lee makes gelatin gels in flavors and adds buffering salts to neutralize the acidity of citric and adipic acids with soluble phosphate and citrate salts at a ratio of 0.9-2: 1 and preferably of 1-1.5: 1(column 2, lines 34-49). The range of the buffer salt ratio taught by Lee includes the ratios recited by the applicant in Claims 31 and 32.

Thus the addition of salts of calcium sodium and /or potassium have been known additives to the beverages. The amount of these salts in a beverage in the recited range of the applicant has also known (Lee). Therefore, it would have been obvious to the one with ordinary skill in the art at the time of invention to modify Braun to include a specific ratio range of the cation / buffer salts used in the beverage as taught by Lee. One would have been motivated to do so in order to provide a balanced composition with desirable tartness and flavor to the finished product.

While the prior art does not expressly teach the exact ratios, it was well known to use the acids listed in shelf stable beverages in different amounts in order obtain the desired flavor. Therefore, absent is showing to the contrary by clear and convincing evidence, it is not seen how the specific ratios claimed by the applicant would create an unexpected result.

Response to Arguments

Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection. Applicant has cancelled claims 1-22 and newly added claims 23-38 have been addressed in the rejection above.

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Remarks/ Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Chawla whose telephone number is (571) 272-8212. The examiner can normally be reached on 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jyoti Chawla
Examiner
Art Unit 1761


KEITH HENDRICKS
PRIMARY EXAMINER